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Four counselors studied the relation between achievement and choice of major, achievement and motivation, counseling and motivation, and achievement and employment. To see if those with definite majors or career choices in mind did better than those without, 300 students were tested according to the certainty of their choice. No significant difference in numeric point average (NPA) was found. The second study undertook to find items of a motivational nature for a test to predict student success. Fifty students with the lowest and 50 with the highest NPA's were selected. Of the 35 who took the 40-item test, 20 had high and 15 had low NPA's. The results suggested only a theoretical structure for a significant test, to be developed after finding more items that truly reflect motivational components of success. The third study defined counseling as visits for other than procedural matters and achievement as high or low. Of 257 selected students, 152 had high grades and 105 had low. Testing for differences between those who did and did not seek counseling showed that, though counseling was most often sought by the high group, no causal effect of counseling on success was warranted. The fourth study was made to see if part-time work affects achievement or course load. A sample of 270 freshmen was divided into five groups by the number of hours they worked. Those planning to work over ten hours a week had lower grades, but there was no difference among the five groups in the credits carried. (HH)

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One of the special problems faced by the two-year college is the high mobility of its students: a junior college's population is, almost by definition, a transient one. In an institution in which any given student remains for two years or less, the possibilities for long-range studies of a uniform population are limited. Still, even though individuals change and characteristics of student bodies may vary from year to year, some elements of contemporary student populations undoubtedly remain constant. To identify these stable factors and to project inferences from one year's student body to another year's is the purpose of much research in the counseling and student personnel area. During the year 1967-68, the Student Personnel Division of the General College made a concerted effort to study one year's General College population from various points of view. Some of the results of that effort are reported in this issue of The General College Studies.

Though the reports given here are separately titled and attributed to individual authors, they might very well be described as one study with several co-authors. Using a common data pool, Student Personnel Office researchers attempted an in-depth analysis of the 1966-67 freshman class. Thomas Hedin, for instance, studied the relationship between counseling and student motivation; Sander Latts investigated the correlation between achievement and student choice of major; William Packwood analyzed the relationship between student motivation and academic achievement; and Barry Weinhold attempted to isolate the impact of outside employment on student achievement. Together these studies represent a comprehensive look at the General College's 1966-67 freshmen.

The authors of these reports are all part-time or full-time counselors in the General College Student Personnel Division. Their studies represent parts of a continuing series of research projects conducted by the Student Personnel Division.

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The Effect of a Definite Major and/or Career Choice on Academic Success

Sander Latts

It is generally assumed that someone who has a clear cut, well-defined goal will be more motivated toward achieving that goal than someone who does not have a well-defined goal. It is likewise assumed that there is a positive relationship between certainty of occupational choice and college attainment. These relationships have been substantiated by a number of studies. Alexander and Roodruff (1940) noted that definite vocational plans at entrance to college were somewhat more typical of students who exceeded their grade predictions than of students who failed to fulfill their academic expectations. Achilles (1935) in an extensive investigation found that above average scholarship was about twice as frequent among students who had made vocational decisions as among students who were vocationally undecided. Lloyd-Jones (1929) reported that superior college students are more specific than other students in their thinking about careers. Crawford (1925-26) similarly concluded that certainty of occupational purpose tends to better a student's academic performance. All of these studies indicate that those students who have definite career choices or definite majors do better academically than students who are not so sure about their futures. In view of the consensus in the literature on the subject, an investigation was begun to test two hypotheses with General College students. The specific hypotheses tested were (1) those General College students who have definite majors in mind when beginning the General College will achieve higher numeric point averages (NPA) than those students who do not have definite majors; and (2) those students who have definite career choices at the beginning of their General College careers will achieve higher NPA's than those students who do not have definite career choices.

In order to test the hypotheses, three hundred students who entered the General College in Fall, 1966, were studied. The principle data source was the Personal Inventory for Entering Freshmen which is filled out by each freshman during the General College orientation-registration period. The particular items of the inventory which were used included the following:

> "It is not always necessary to decide upon a major upon entering and indeed it is often wise to postpone that decision until after further university experience. If you have made a tentative decision, however, what is it? How certain of it are you?"
>
> Absolutely fixed choice
> Reasonably certain
> Fairly certain
> Somewhat doubtful
> Very uncertain

"If you have a vocational objective, what is it? Be as specific as possible, indicating what kind of business, size of company, etc. How certain are you of this choice?"

Absolutely fixed choice
Reasonably certain
Fairly certain
Somewhat doubtful
Very uncertain

Each of the "certainty" choices was given a numerical ranking as follows:

"1: very uncertain; 2: somewhat doubtful; 3: fairly certain; 4: reasonably certain; 5: absolutely fixed choice."

Using this ranking system, the sample population was broken down into two groups. The "very uncertain" and "somewhat doubtful" were grouped together. Those who indicated "fairly certain", the middle response, were eliminated from the sample. Next, a comparison between the two extreme groups and the average NPA for General College freshmen was made. Analysis of covariance with academic ability as covariate was used to test for significance.

The results of the analysis of covariance (with "certainty" of major choice as the independent factor and the NPA as the dependent variable with ability level as the covariant) are reported in Table 1.

TABLE 1

Source	df	SS_x	SS_y	SS_{xy}	df	$SS_{y\,1}$
Between	1	6.903	.0606	-.6470	1	.144
Within	131	24971.927	415.8523	1267.1980	130	351.5435
Total	132	24978.83	415.9129	1266.5510	131	351.6925

$F = .0532$ $\qquad F_{.95}(1, 130) = 3.92$

As is quite evident from perusal of this table, there is no significant difference between the NPA of those freshmen in the sample who have a definite career choice and those freshmen who have not selected any major. As noted in Appendix A, the freshmen who did not make a major selection had a slightly higher NPA at the end of one year than those who said that they had selected their college major. Of course, these averages are not corrected for student ability.

Table 2 shows the relationship between those entering freshmen who specified a vocational interest and those freshmen who did not specify a vocational interest, comparing these two groups on the NPA at the end of the freshmen year.

TABLE 2

Source	df	SSx	SSy	SSxy	df	SSy^1
Between	1	13.810	.1622	-1.4970	1	.3419
Within	100	19776.030	302.8218	969.2237	99	255.3201
Total	101	19789.840	302.9840	967.7267	100	255.6620

$F = .133$ $\qquad F_{.95}(1, 99) = 3.96$

Again we can observe that there is no significant relationship between the NPA of those students who have a vocational goal and the NPA of those who do not specify a vocational goal. Again, in Appendix B, we see that the low group had a higher average NPA at the end of one year than the group that indicated vocational choices. The results of both comparisons, that of major and NPA and vocational interest and NPA, clearly indicate that there is no significant difference in academic achievement, as measured by NPA, between General College freshmen claiming to have a clearly defined vocational educational goal and those who do not.

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Appendix A

X = CAR Y = NPA

	Mean	S.D.	Mean	S.D.
Low	31.13	10.98	6.29	1.93
High	31.61	15.08	6.25	1.70
Total	31.44	13.76	6.26	1.78

	N
Low	46
High	87
Total	133

Appendix B

X = CAR Y = NPA

	Mean	S.D.	Mean	S.D.
Low	31.24	11.08	6.61	2.03
High	32.15	14.71	6.51	1.66
Total	31.96	14.00	6.53	1.76

Motivation and Academic Achievement in the General College

William T. Packwood

Predicting academic achievement for students has always been difficult. While high school rank (HSR) and ability tests like the Minnesota Scholastic Aptitude Test (MSAT) have usually been found to have correlations of around .50 with achievement, in the General College these correlations drop to approximately .30 for HSR and .20 for MSAT. Other test scores do not add substantially to reliability of prediction. It seems likely, therefore, that other factors need to be considered. Cattell (1961) has stated that abilities, personality traits and motivational traits contribute about equally to the variability of scholastic achievement. His data is based on eleven- and twelve-year-olds, but with Radcliffe and Sweney (1960), he has shown the validity of his devices to be very similar for children and adults.

In a similar vein, Farquhar (1962) has found that his weighted motivation, or M-scales, can increase precision of academic prediction, although neither his theory nor his data account for as large a portion of the variance as Cattell's do. The major problem with both Cattell's and Farquhar's approaches is that they use numerous instruments. This complexity makes their procedures impractical for use in most college orientation sessions.

The Problem

This project was undertaken in the hope of finding items of a motivational character for a brief questionnaire to be used in predicting student achievement in the General College. Motivational items were chosen because predictions based upon previous achievement and ability measures have been inadequate, particularly for a junior college population. Personality variables were considered to be outside the scope of this project.

Selection of Students

The population for this study was the approximately 1500 students who entered the General College in the Fall Quarter, 1966, and who were still registered in Winter, 1968. Members of this group were students long enough to have developed consistent study habits, numeric point averages (NPA) and attitudes. Each member in the population was first ranked according to his NPA. Those students with the highest fifty NPA's and the lowest fifty NPA's were chosen as subjects for study. A limitation imposed upon this sample resulted from the fact that some of the potential subjects were no longer registered in the College at the time of this study. They had either transferred, terminated,

or had been dropped. This limitation was necessary in order to have students available to fill out a questionnaire. The total sample, therefore, consisted of 100 students who entered the General College in Fall, 1966, and who were still registered in Winter, 1968.

Procedure

A letter was sent to these 100 students, requesting that they come to the General College counseling office to fill out an anonymous five to ten minute true-false questionnaire concerning "what it takes to be a student in General College." Another letter and two postcards were sent as reminders. A total of 35 students came in. What effect self-selection had on the study is difficult to determine. 20 of the 35 students who came in had high NPA's (mean = 9.09) and fifteen had low NPA's (mean 4.11).

The questionnaire consisted of 40 items which were devised by several methods. Some were based upon what students had said in interviews, some on clinical hunches by counselors, and some from findings in the myriad studies done on achievement. The questionnaire items were reviewed by the counseling staff to determine if they were obnoxious or unclear in any way. No item was accepted if it had more than one objection to it.

The last item on the questionnaire asked the student to list his own reasons for his achievement. This item was regarded as a potential source for future items.

Results

The hypothesis for each item was that there would be no difference in percentages of high NPA students who circled an item true (or false) from the percentage of low NPA's who did so. Two-tailed z-tests were used. The hypothesis was rejected for eleven items. Table 1 gives these items and their respective p-values. The answers given below differentiated the high NPA's from the low NPA

TABLE 1

Differentiating Answer of High NPA's		P-Value
False	17. I find it difficult to concentrate when I study.	.01
False	18. I owe it to my parents to attend college.	.01
False	28. I am not doing as well in GC as I should be.	.01
True	35. I generally study at the same time each day.	.02
False	3. I plan to go into business or sales.	.05
True	24. My present behavior is in line with my future goals.	.05
False	26. I am more interested in doing what I want now than in waiting until some future time.	.05
True	27. I dislike making decisions.	.05
False	29. The thing I want most in the next five years is to have lots of good friends.	.05
False	10. I like to choose my courses according to what time in the day they are offered.	.10
True	39. I do not find the work in GC challenging enough.	.10

Discussion

The purpose of this study was to find differentiating items. The results of administering the questionnaire leads to several comments. Perhaps the largest grouping of responses could be included under the heading of discipline: studying at the same time each day (35); postponement of gratification (26); concentrating when studying (17); and present behavior being in line with future goals (24). Another group might be called a form of independence: not attending college because one owes it to one's parents and not having good friends as a primary goal.

Not going into business or sales could be put in either group, as it is frequently seen by students as requiring mainly social skills and as not involving academic skills. Likewise, not choosing courses according to what time in the day they are offered fits into either grouping. It could represent a willingness to make sacrifices for college work or an attitude of doing what one needs or wants to do rather than what is expected. Of course, it could be the result of employment or commuting also.

The most surprising item, "I dislike making decisions," might indicate a type of conformity, a form of dependency, or a willingness of some high NPA students to be honest about themselves. Cattell (1961) states that there is a distinct relationship between submission and academic achievement. Responses to "I am not doing as well in GC as I should be" would seem to be a statement of fact. "Work in GC is not challenging enough" may also be factual; more probably it reflects pride or confidence.

The previous discussion suggests some possible theoretical structure for the significant items. It is hoped that in the future this structure will be expanded as more items are found. The goal is to eventually develop a questionnaire, composed entirely of significant items, reflecting motivational components of achievement. This study has provided several guidelines for those future efforts.

First of all, ability must be controlled. The high NPA students had a mean College Aptitude Rating ($CAR = \frac{HSR+MSAT}{2}$) of 41 and the low NPA students had a mean CAR of 23. The data yielded an $F = 11.74$ which is significant at the .01 level. This would indicate the possibility that grades and questionnaire answers in this sample are a reflection of ability. To check this, correlations between NPA and CAR were run for both the high and low NPA groups. These correlations were run separately to avoid inflation from the use of two extreme groups or the range effect. The correlation for the high NPA's was .33 and the correlation for the low NPA's was -.19. The overall correlation for both groups was .63. It was impossible to run correlations for the two groups using NPA and CAR plus questionnaire answers because the students were

not asked to sign the questionnaires. Anonymity was used both in an attempt to get more students to fill out the questionnaires and to avoid the influence of social desirability. This procedure is now considered to have been unwise. It would seem to be more realistic and appropriate to have the questionnaires signed so that the answers could have been used for increasing the accuracy of prediction of achievement for an individual student.

Secondly, differentiation should be made by sex, and attitudes as motivations are probably different for males and females. No such differentiation was made in this study because of the small sample size and because both sexes were treated strictly as students.

Finally, some categorization by personality types would seem to be called for. For example, the answers of a social extrovert would cancel out those of an insecure worrier, yet both personalities could result in lower NPA's. Goodstein (1962), in studying personality correlates of academic adjustment obtained some indication that personality is more closely associated with achievement in the middle ranges of ability than is ability itself. This finding would seem applicable to studies of achievement in the General College, since 40% of the student body falls in the middle range. Goodstein also found that different institutions place varying emphasis upon the importance of personality in college achievement. It is possible that the General College is one of the institutions that places strong emphasis on personality. In any case, it is important that personality be taken into account.

APPENDIX 1

SEX:_____ _____ NAME:_____
male female Please Print

Please circle T if the item is true for you and F if the item is false for you.

T F 1. I work more than 20 hours per week.
T F 2. I am married.
T F 3. I plan to go into business or sales.
T F 4. I study less than 20 hours per week.
T F 5. I have made a definite vocational choice.
T F 6. A member of my immediate family has attended college.
T F 7. I prefer five credit courses.
T F 8. At one time since I enrolled in General College, I definitely considered the possibility of attending a state college.
T F 9. I am presently dating someone I plan to marry.
T F 10. I like to choose my courses according to what time in the day they are offered.
T F 11. A college degree will get me a better income later.
T F 12. I prefer to be up and doing things rather than studying.
T F 13. I pick up information quicker when I hear it from another person than when I read it in a book.
T F 14. A college education is primarily important for the practical knowledge that I get which is related to my future job.
T F 15. I study much the same way I did in high school.
T F 16. General College does not do as much as it should to help its students.
T F 17. I find it difficult to concentrate when I study.
T F 18. I think I act more like a 19 year old than a 25 year old.
T F 19. If I would really study I could get better grades.
T F 20. I owe it to my parents to attend college.
T F 21. I seldom finish things I've started.
T F 22. My parents really do not listen to me very often.
T F 23. A good student does not have to study.
T F 24. My present behavior is in line with my future goals.
T F 25. I do not have as many friends as I would like.
T F 26. I am more interested in doing what I want now than in waiting until some future time.
T F 27. I dislike making decisions.
T F 28. I am not doing as well in General College as I should be.
T F 29. The thing I want most in the next five years is to have lots of good friends.
T F 30. I generally do not pay attention in class.
T F 31. I can go into any vocation I want to if I decide that it is really what I want.
T F 32. I do not usually feel very confident about my papers and assignments.
T F 33. I believe in having a good time while I am young.
T F 34. The primary things that might keep me from continuing my college education are my outside-college interests.
T F 35. I generally study at the same time each day.
T F 36. I do not have a place to study at home.
T F 37. My friends are generally those who went to high school with me.
T F 38. I definitely plan to transfer to CLA.
T F 39. I do not find the work in GC challenging enough.
T F 40. The more competitive or the higher the level of a course the better will be my grade in it.
41. To what do you attribute your grades in General College.

APPENDIX 2

Item No.	Table	Percentage Who Answered True	Item	P-Value
17	T F H 8 12 20 L 13 2 15 21 14 35	H - 40% L - 87%	I find it difficult to concentrate when I study.	$< .01$
20	T F H 3 17 20 L 9 6 15 12 23 35	H - 15% L - 60%	I owe it to my parents to attend college.	$< .01$
28	T F H 6 14 20 L 13 2 15 19 16 35	H - 30% L - 87%	I am not doing as well in GC as I should be.	$< .01$
35	T F H 18 2 20 L 8 7 15 26 9 35	H - 90% L - 53%	I generally study at the same time each day.	$< .02$
3	T F H 6 14 20 L 10 5 15 16 19 35	H - 30% L - 67%	I plan to go into business or sales.	$< .05$

Appendix 2 (Continued)

24

	T	F	
H	16	4	20
L	6	9	15
	22	13	35

H - 75%

L - 40%

My present behavior is in line with my future goals. $\angle$ .05

26

	T	F	
H	7	13	20
L	11	4	15
	18	17	35

H - 35%

L - 73%

I am more interested in doing what I want now than in waiting until some future time. $\angle$ .05

27

	T	F	
H	6	14	20
L	0	15	15
	6	29	35

H - 30%

L - 0%

I dislike making decisions. $\angle$ .05

29

	T	F	
H	1	19	20
L	5	10	15
	6	29	35

H - 5%

L - 33%

The thing I want most in the next five years is to have lots of good friends. $\angle$ .05

10

	T	F	
H	8	12	20
L	11	4	15
	19	16	35

H - 40%

L - 73%

I like to choose my courses according to what time in the day they are offered. $\angle$ .10

39

	T	F	
H	7	13	20
L	1	14	15
	8	27	35

H - 35%

L - 7%

I do not find the work in GC challenging enough. $\angle$ .10

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An Investigation of the Relationship of Achievement Level and Motivation for Counseling in General College Students

Thomas R. Hedin

Introduction

The focus of this study is the relationship between the motivation for counseling and academic achievement among freshmen in the General College during the 1966-67 academic year. Counseling was defined as visits with a counselor in the General College Student Personnel Office for purposes other than advising, cancel-out, withdrawal or other college procedural purposes. Counseling was classified by the Missouri classification system as used in a previous study of caseload in the same office. (Scheller, 1965).

Academic achievement was classified as high and low. High academic achievement is defined as combined numeric point average (NPA) for fall, winter and spring quarters of 1966-67 sufficient to place students in the upper twenty-five percent of the total class NPA distribution (NPA of 7.5 or higher). Low academic achievement is defined in a similar manner for the bottom quarter of the distribution (NPA of 5.2 or below).

The sample consisted of 257 General College freshmen who entered the fall quarter of 1966 and remained enrolled through the spring quarter of 1967. Of this group, 152 students were classified in the high achievement category and 105 were classified in the low achievement category. Thus, the original sample was divided into two sub-groups.

The problem and its literature.

The hypothesis of the study is that there are some differences between students who seek and receive counseling and those who do not seek and receive counseling. In most educational institutions, counseling, like medical aid and other forms of emergency attention, is offered unrestrictedly as a service, and is not withheld from some students for research purposes. For that reason, few studies of counseling outcomes have had the advantages of an experimental methodology. Most literature in the area of counseling either omits mention of any control group or mentions a matched-sample control group of students who did not volunteer for counseling.

A discussion of the methodology of counseling outcome studies is excellently presented in Campbell (1965) and Volsky, et al (1965). Both of these studies emerged from the "hard-headed", empirical tradition of Minnesota research. The conclusion of both of them is that counseling does have some positive and consistent measured effects on students. The size of these effects, however, is somewhat smaller when "motivated" control groups are used. It is generally agreed

that counseling produces, or is associated with, an increase in scholastic grade-point averages. Factors controlling for academic ability, however, are seldom used.

Volsky, et al (1966) compared the effects of counseling on subjects who sought and received counseling and on subjects who sought but did not receive counseling. Of 33 hypotheses tested, none were significantly suggestive of a positive effect of counseling. Their study used no academic criterion, however. Campbell's study (1965) is a twenty-five year follow-up of Williamson and Bordin's study of 1933 which sought to examine the results of counseling. Campbell found that students who sought and received counseling were "mildly different" on academic measures and generally more successful at the University and in careers, but that these differences were very slight. In his review of literature, Campbell makes the following statement which is pertinent to the present investigation:

> "The studies reported to this point, while almost uniformly in favor of the hypothesis of counseling effectiveness, cannot be considered definitive. The lack of an adequate control group is a serious criticism, one that cannot be erased by even dozens of studies showing results favoring counseled over non-counseled students. In the face of this evidence, however, those who hold for the third factor explaining both the student's tendency to seek counseling and earn better grades (or whatever) must start coming forward with some demonstration of that factor. These data showing the associative connection between counseling and various kinds of changes cannot be dismissed lightly." (1965, p. 17-18)

From the perspective of Campbell's comments, this study attempted to investigate the relationship of motivation for counseling, ability for college success, and academic achievement.

Procedure

Student Personnel folders for each student in the two sub-groups were investigated for evidence of counselor notes. Classifications of interview content were subjectively made by the investigator according to the categories used in Table 1. If no counselor notes were found, or if counselor notes indicated only that the interviews were of an advising or procedural nature, the folder was tabulated in the "non-counseling" group. All students categorized in the "counseled" group volunteered for counseling. No control was used for the variable of motivation for counseling.

Results and Discussion

Results of classification of interview content are presented in Table 1. The Chi-Square Analysis is significant at the .07 level. This significance allows for the inference that counseling was more frequently sought and received by

students in the high achievement group than by students in the low achievement group. The size of the numbers in each cell make further statistical analysis of interview content unwarranted. A perusal of the table, however, indicates that students in both groups sought counseling on personal matters and study skills at about the same rate. A slightly higher proportion of students in the high achievement group, however, sought and received counseling of a program-planning and educational-vocational nature. No causal effect of counseling on academic achievement is warranted from these data.

Table 1

A. Description of interview content for high achievement group. (N = 152)

Interview Content	Number of Interviews 1	2	3	4	5 or more	Total
Personal	2	-	-	-	4	6
Program Planning	6	2	3	1	1	13
Vocational-Educational	7	6	1	1	3	18
Study Skills	-	1	-	-	1	2
TOTAL	15	9	4	2	9	39

B. Description of interview content for low achievement group. (N = 105)

Interview Content	Number of Interviews 1	2	3	4	5 or more	Total
Personal	1	1	-	1	3	6
Program Planning	2	2	1	1	-	6
Vocational-Educational	1	1	-	-	-	2
Study Skills	1	-	-	-	1	2
TOTAL	5	4	1	2	4	16

C. Chi-Square Analysis

	Counseled	Non-Counseled	Total
High Achievement NPA = 7.5 or higher	39	113	152
Low Achievement NPA = 5.2 or less	16	89	105
TOTAL	55	202	257

$Chi^2 = 3.42$*

* significant at .07 level.

Further statistical analyses were performed in order to further investigate dimensions on which the two populations, high achievers and low achievers, may differ. Table 2 reports the relationship of counseling and level of ability for college work as measured by the CAR[1] utilizing the analysis of variance technique.

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[1] CAR is the College Aptitude Rating. CAR is an average of high school rank (HSR) and percentile score on the Minnesota Scholastic Aptitude Test (MSAT).

TABLE 2

Results of Analysis of Variance Comparing CAR of High and Low Achievement Groups

Source	SS	df	MS	F
Treatments	733.2011	1	733.2011	3.868*
Error	47,002.9949	248	189.5282	
TOTAL	47,736.1960			

* P $<$ .05 Where F.95 (1, 200) = 2.98

Table 2 indicates a F of 3.868 which is significant at the .05 level. The inference made is that students who sought and received counseling had higher ability, as measured by the CAR, than students in the non-counseled groups.

Table 3 introduces the correction for measured academic ability by the analysis of covariance technique. This procedure has the effect of correcting for CAR differences between counseled and non-counseled groups. The result is non-significant. The inference made from this analysis is that the difference in academic achievement between the two groups is almost totally accounted for by the established differences in academic ability.

TABLE 3

Testing the difference between the two groups (Counseled versus non-counseled) after correcting the NPA (variate) for CAR (covariate).

Source	df	SS	SS	df	MS	F
Treatment	1	8.9655	.4871	1	.4871	.2368 (N.S.)
Error	249	846.5507	510.1846	248	2.0572	
TOTAL		855.8162	510.6717			

Where F.95 (1, 200) = 2.89

The sampling procedure of this study, however, violates the assumptions of normality implicit in the analysis of covariance. Therefore, partial correlation, a statistical procedure which does not assume a normal distribution, is introduced. This procedure, like the Chi-Square procedure, indicates no causality, but merely the strength of the relationship between counseling and NPA. It does, however, hold the variate of academic aptitude (CAR) constant. The partial correlation

coefficient of .03 indicates the relationship between counseling and NPA to be very near zero and further suggests that the "counseling," as we have defined it, is not an important variable in the prediction of academic success as measured by NPA.

Summary

This study leads to the conclusion that a higher proportion of high achieving students sought and received counseling than of low achieving students. Since all students who received counseling were volunteers, no statement can be made on the effect of counseling on academic achievement. This investigation cannot then be called a study of counseling outcomes.

The analyses used also lead to the conclusion that students who sought counseling had higher measured ability than students who did not seek counseling. When ability was controlled in the analysis of the relationship of counseling and NPA, a nonsignificant result was obtained, giving further evidence that the relationship between NPA and seeking counseling is statistically and practically insignificant.

Within the limits of this study, then, we are left with the conclusion that, in the General College, high achievers seek Student Personnel Office counseling more often than low achievers; and that students who seek counseling have significantly higher measured ability than students who do not seek counseling.

Implications

Two implications seem relevant. First, a higher proportion of high achieving General College students seek counseling than low achieving students. It must be remembered, however, that the sample used in this study was not a sample of the whole range of student ability and achievement, nor did it include freshmen who did not complete the academic year. The results of the study suggest, however, that further investigation of methods of expanding counseling services to low achievement students is warranted. Secondly, the data presented here suggest that academic achievement is largely dependent on measured academic ability. Researchers of counseling outcomes would, as Campbell suggests, be well advised to control for academic ability when academic achievement is employed as a criterion measure.

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The Effects of Student Employment on First Quarter Freshman Grades

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Problem

The purpose of this study was to investigate the effects of student employment on the academic achievement of first quarter freshmen who entered the General College of the University of Minnesota, Fall 1966. A secondary problem was to determine whether or not students who work part-time compensate for the time by taking reduced course loads.

Rationale

Does part-time employment among college students seriously affect their academic achievement? Do they compensate for the time taken by work by taking reduced course loads? Should working students be encouraged or even forced to reduce the number of hours they are employed or the number of credits they are taking?

A sizeable proportion (62 percent) of students at the Twin Cities campus of the University of Minnesota hold jobs while attending college. (Bureau of Institutional Research, 1968) Advisers and counselors make varying assumptions as to the effects of this employment on academic achievement. Using these assumptions, they advise students who are employed regarding courses, credit load, and study habits.

Research on the subject, as summarized by Henry (1963), demonstrates that up to a "reasonable work load" most students who work perform academically at least as well as those who do not work. However, that conclusion is not very helpful to advisers, since the literature is not clear as to what is a "reasonable work load" and the results of some studies are contradictory regarding the effects of employment. Also, as indicated by Henry (1967), "...the effects of part-time employment on the academic performance of first-semester freshmen with limited family financial ability are less well defined and evidence concerning this particular point is rather scarce." (p. 257). A recent study (Anderson, 1966) completed at Modesto Junior College showed no significant differences in academic achievement between first semester freshmen who were employed and a matched control group who did not work. However, Anderson's study used only students employed sixteen or more hours in his employed groups.

Diemer (1958) found that students who worked more than twelve hours a week had somewhat lower grades than those working less than twelve hours. Trueblood (1957) in a study of 568 Indiana University students, concluded that working did not seem to have either a positive or a negative effect upon academic achievement. He found no trends which might indicate maximum hours that a student could work without affecting his grades.

Keene (1959), in a survey of studies on employment and academic achievement, listed seven studies reporting unfavorable effects of student employment upon academic achievement; nine studies reporting that better grades were achieved by working students than by non-employed; and nineteen studies showing little or no effects of work upon academic achievement.

A recent survey by the Bureau of Institutional Research at the University of Minnesota (1968) showed that 30 per cent of the students who worked indicated that they felt working hurt their grades seriously.

Henry (1967), using a sample of freshmen students employed under the Work-Study Program and on the University Student Labor Program at the University of Missouri, found no significant differences in grades between those on Work-Study and a similar sample of non-employed freshmen. He concluded that "It would appear, on the basis of this and other studies, that financial aid offices and counselors can advise entering freshmen who need financial assitance to seek part-time employment up to fifteen hours a week without fear of the student's sacrificing academic achievement" (p. 259).

Henry's sample, however, contained no students who worked over fifteen hours. The limitation in sample seems to indicate that Henry's conclusion may be inappropriate and suggests that further studies using a wider sample may be necessary before any similar conclusions can be made.

Another problem not dealt with in most studies surveyed is that of accounting for the amount of variability which can be attributed to academic ability. There is reason to believe that, since there is a positive correlation between academic ability (CAR = College Aptitude Rating) and academic achievement (NPA = Numeric Point Average), a good portion of the error variance attributed to differences in hours of work may be due to academic ability. For example, a correlation of .50 between NPA and CAR would mean that 25 percent of the error variance is accounted for by a measure of academic ability. Therefore, any study of the effects of student employment on academic achievement should control for the amount of error variance due to academic ability. This control can be achieved by grouping the data on academic ability or by using academic ability as a covariant in the analysis of covariance.

Procedure

For this study, a random sample of 270 first quarter freshmen was selected from the population of students who entered the General College of the University of Minnesota in the fall quarter, 1966. A tabulation taken from a Personal Inventory form filled out by each student during the orientation-registration period prior to the beginning of the academic year was made of the hours students intended to work during the fall quarter.

The subjects in the sample were divided into five sub-groups (see Table 1 for a breakdown). A numeric point average (NPA) and a College Aptitude Rating (CAR) were computed. The number of credits completed fall quarter was also recorded.

Two specific hypotheses, here stated in the null form, were tested: (1) There was no significant difference in first quarter NPA among the five employment groups; (2) There was no significant difference in number of credits completed for fall quarter among the five employment groups.

The first hypothesis was tested using one way analysis of covariance with academic ability (CAR) as a covariant. The second hypothesis was tested using one-way analysis of variance. Also a test of Common Slope was performed on the five sub-groups to determine if the assumptions underlying analysis of covariance were met. In this test it is necessary to determine whether or not the regression lines of the five sub-groups differ significantly. Analysis of covariance is based on the assumption that they do not differ significantly.

TABLE 1

DESCRIPTION OF EMPLOYMENT GROUPS

SHOWING MEAN CAR AND NPA

Group	Number of Subjects	Hours	Mean Number of Credits	X Means (CAR)	Y Means (NPA)
1	109	0	13.6	30.4862	6.7769
2	22	3-10	13.7	33.1364	6.8291
3	37	11-15	13.1	27.1892	5.8619
4	71	16-20	13.5	32.1690	5.7690
5	31	21 +	13.6	31.9032	5.9739
TOTALS	270		13.6	30.8556	6.2985

Results

There were significant differences among the mean NPA's of the students in the various employment groups (see Tables 1 and 2). The break clearly occurred after ten hours per week and hypothesis #1 was rejected at less than the .001 level of significance. This result means that students in this sample who worked more than ten hours per week had significantly lower grades during their first quarter in college.

TABLE 2

RESULTS OF ANALYSIS OF COVARIANCE

TESTING DIFFERENCES IN NPA FOR FIVE EMPLOYMENT GROUPS

Source	df	SS	MS	F	P
Treatment	4	62.7502	15.6876	6.725	< .001
Error	264	615.8564	2.3328		
TOTAL	268	711.0488			

Table 3 shows that there were no significant differences in the number of credits completed fall quarter by the students in the various employment groups. (F = .6278). The average number of credits completed (shown in Table 1) for the total sample was 13.6.

TABLE 3

RESULTS OF ANALYSIS OF VARIANCE

TESTING DIFFERENCES IN CREDIT LOAD FOR FIVE

EMPLOYMENT GROUPS

Source	df	SS	MS	F
Treatments	4	8.0365	2.0001	.6278 (N.S.)
Error	264	844.8270	3.2001	
TOTAL	268	852.8635		

The test of Common Slope showed no significant differences among the regression lines of the five sub-groups (F = 1.475). Therefore, the assumption of homogeneity of the regression coefficients necessary in analysis of covariance was not violated. This is an important assumption and cannot be violated without serious consequences for the validity of the results, particularly when there are relatively small and unequal sample sizes (Hays, 1963).

TABLE 4

RESULTS OF TEST OF COMMON SLOPE

TESTING ASSUMPTIONS NECESSARY FOR USE OF ANACOVA

Source	df	SS	MS	F
Treatments	4	13.661	3.415	1.475 (N.S.)
Error	260	602.195	2.312	
TOTAL	264			

Discussion

The highly significant differences in the employment sub-groups are an excellent indication that for this sample (first-quarter General College freshmen) more than ten hours of employment seriously affects performance in the classroom. However, there were several limitations in the sampling procedure that may require further investigation before these results can be generalized beyond this sample. First, the hours of work data was taken from the Personal Inventory Form on which the students indicated that they intended to work a certain number of hours. This limitation was checked a posteriori by determining the number of hours of employment indicated on the winter quarter registration form, which is filled out late in fall quarter. These results show a Pearson product-moment correlation coefficient of .57 which indicates a serious discrepancy between the hours students indicated that they planned to work during fall quarter and a later indication of the hours they were actually working. These results are far from conclusive, however, since only 134 out of 270 actually filled out this part of their winter quarter registration forms. There is no clear indication that the data on the Personal Inventory or on the registration form truly represent the numbers of hours worked. The procedure containing the least amount of error would be to ask students to fill out an hourly time schedule without telling them that number of hours working was the variable with which a study is concerned.

Second, it is imperative to note that this study was a comparison between first quarter freshmen intended work hours and first quarter freshmen grades. No generalizations from this sample to second and third quarter freshmen, or to sophomores, are warranted. There may be reason to believe that students can handle progressively more work hours after their first quarter without serious effects on their grades. However, this is an unknown factor which merits further study. The failure of the second hypothesis to be rejected indicates that the students in this sample did not compensate for their working hours by taking

reduced credit loads. However, it does not exclude the possibility that they tried to compensate by taking easier courses or by curtailing other activities.

Even within the limitations of the present study, it is still important to note some implications. One that is immediately apparent relates to the policy of College Work-Study programs, in which students generally work fifteen hours per week. Perhaps first quarter freshmen on College Work-Study should be limited to less than fifteen hours per week and the resulting difference in remuneration be compensated for through a grant-in-aid or some other form of financial assistance. However, further study regarding the effects of employment in subsequent quarters may be necessary before this implication is generalized. Certainly, the rationale for fifteen hour maximums in the College Work-Study program for all levels of students should be tested.

Another important implication of this study involves the use of analysis of covariance and academic ability as a covariant. As indicated earlier in the review of research, very few studies have dealt with the effects of ability on achievement. With most colleges reporting correlations of around .50 and .60 between academic ability and first quarter college grades, it seems important to correct for the effects of a factor that may account for between one-fourth and one-third of the total variance of achievement. Therefore, to accurately assess the effects of employment on student academic achievement, it is necessary to account for the effects of academic ability. Any further research on the effects of student employment on academic achievement should include some control on the effects of academic achievement.

Summary

The purpose of this study was to determine the effects of student employment on first quarter freshmen grades of students enrolled in the General College. Using analysis of covariance as a control for the effects of academic ability, it was found that first quarter freshmen who indicated that they intended to work more than ten hours per week had significantly lower grades. No differences were found in number of credits taken among the employment groups. Implications of the information for financial aid programs such as College Work-Study were discussed and the need for further studies controlling the effects of academic ability was presented.

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